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RISKY CONSUMPTION AMONG ADOLESCENTS: A SURVEY FOR SPAIN

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The purpose of this paper is to review the extensive literature on the abuse of drugs by minors in Spain. The most important evidence obtained so far for Spain is gathered in the following results. While it is true that the authors have identified the environment and the lack of information on the harmful effects of drug consumption as the primary determinant variables in drug use, they also show that, through information campaigns and reduction of drug use by both parents and friends, the rates of individual drug abuse would be reduced. It is important to invest money in information campaigns about the risks of drug use, because adolescents are the most vulnerable to substance abuse leading to dependency, to school failure, and consequently to a deterioration in the individual stocks of human capital - not to mention the effects on health.

I. Introduction

In Spain, there has long been a debate over how to implement policies to reduce the abuse of alcoholic beverages, tobacco, and other drugs among younger individuals. These kinds of abuse, almost always acquired in adolescence, are especially disturbing given the vulnerable psychological nature of these individuals, who configure their own identity, partly through the adoption of certain modes of risky behavior (Hawkins et al. 1992).

The purpose of this paper is to review the extensive literature on the abuse of drugs by minors in Spain (García and Labeaga 1992; Jimenez and Labeaga 1994; García and Labeaga 1996; Jiménez-Martín et al. 1998; Labeaga 1999; Escario and Molina 2000; Escario and Molina 2001; Escario and Molina 2001; Jones and Labeaga 2003; Escario and Molina 2004; Escario and Molina 2004; Duarte and Molina 2004; Carrasco et al. 2005; Duarte et al. 2005; Duarte et al. 2005; Duarte et al. 2006; Jiménez-Martín et al. 2006; Gil and Molina 2007; Gil and Molina 2009; Duarte et al. 2009; Todeschini et al. 2010; Todeschini et al 2010; Duarte et al. 2011; Duarte et al. 2013; Borderías et al. 2015; Duarte et al. 2015; Duarte et al. 2015), focusing on the influence of the environment on adolescents to consume these goods, along with an explanation of the rational theory of consumption in decision-making, and a discussion of the relevant public policies (proposed or carried out) in Spain to curb this behavior. We examine the reasons why adolescents begin to use drugs, and why they become habituated, considering such factors as stress, pleasure, and peer pressure from the individual's closest environment.

From a socio-economic point of view, abuse of drugs can trigger a series of physical and psychological problems. In addition to health problems that directly affect

the individual through the liver, the stomach, the lungs, substance abuse also acts on the brain, reducing concentration and reaction levels, which increases the risk of death or injury, for example, in traffic accidents. In addition, it can lead to premature sexual contacts, with the consequent risk of unplanned pregnancy and the transmission of sexual diseases. All these problems, which affect both present and future health, clearly imply a significant loss to the individual's human capital, thus reducing the possibility of higher personal income. Drug abuse among young people is clearly an important public health problem and, it is logical that society think in terms of restrictive and preventive socio/economic regulation that, in addition to including educational measures, also imposes effective penalties.

II. Rational consumption and elasticities

Becker and Murphy (1988) propose the rational addiction model, based on a behavior that maximizes the utility obtained during the total lifetime of individuals. This model incorporates dependence between the current and the past consumption of addictive goods, implying that recognition is given to notions of tolerance, reinforcement, and withdrawal. Tolerance suggests that a given level of consumption yields less satisfaction, as past cumulative consumption is higher. Reinforcement implies a learned response to past consumption, and withdrawal refers to a negative physical reaction and other reductions in utility associated with the cessation or interruption of consumption.

In this context, Escario and Molina (2000) use this model to obtain different anticipated and unanticipated demand elasticities, which allow for characterizing the behavior of individuals with respect to tobacco consumption. Thus, a good will be addictive if its consumption is complementary in several periods; that is, if its consumption in different periods is positive and significantly related.

$$C(t) = c_0 + c_1 C(t-1) + c_2 C(t+1) + c_3 P_c(t) + t_{78} T78 + t_{79} T79 + t_{82} T82 + t_{88} T88 + u(t)$$

Moreover, the test of rational addiction, as compared to myopic addiction, consists of proving whether consumers take the future into account when making current decisions. Thus, myopic demand is only backward-looking, while rational demand is both backward- and forward-looking. Finally, the rational model implies that the past period has more influence over current consumption than the future period.

In Escario and Molina (2000), where tobacco consumption is studied in minors, based on the number of cigarettes sold in the period 1964 to 1995 the authors estimate elasticities through the average values of tobacco prices and consumption. All price effects are individually significant at the 5 percent level and all values have the expected negative sign, according to normal demands. That is, it is usual for the effects of different prices to be negative, given that increases in price will reduce the quantity consumed in the current period.

Given that the rational consumer anticipates the future in current decisions, the effects of price on consumption are greater when price changes are anticipated. This is so because if the price increases in a particular period without the consumer anticipating such a change, there will be no reaction until that period. By contrast, if the consumer knows in advance that the price will increase in a given period, then he knows that the good will be more expensive in the future and thus will reduce his consumption. Thus, the reaction is anticipated, reducing the consumption. However, given that the consumption of the addictive good is time-complementary, a reduction in the consumption in previous periods will reduce consumption in the period in which the price increases, reinforcing the change in consumption. On the other hand, if the variation refers to a future period, then the change in the quantity demanded in that period will also modify the current quantity demanded, given that the rational consumer

will consider the future price in current decisions. Moreover, note that the price and consumption parameters of the past period are broader than the coefficients corresponding to the past period, indicating that the effect of current consumption is greater in the past than in the future. Thus, the price elasticity of the past period will be higher than that of the future.

In sum, the conclusions reached in Escario and Molina (2000) of a rational model is that, given that the rational consumer anticipates the future in current decisions, the effects of the price on consumption are greater when changes in price are anticipated. Moreover, as expected, long-term values are higher than short-term values. Therefore, assuming rational consumer behavior, levels of consumption will be controlled through prices.

III. Peer effects and intergenerational consumption

III.I. Peer effects

One of the main avenues that leads teenagers to the world of drug addiction is "imitation", either for social reasons (do what your friends do), or simply the fact that their parents are smokers and pass on that habit.

Duarte, Escario and Molina (2011) observe in their study that the influence of the peer group on academic results has often been examined, with several authors concluding that belonging to a deviant group can lead to higher rates of truancy and school failure (Winkler 1975; Borjas 1994; Aaronson 1998; Sacerdote 2001; Hanushek et al. 2003). Other papers have demonstrated the influence of the peer group in the consumption of substances such as tobacco, alcohol, and other drugs (Gaviria and Raphael 2001; Kawaguchi 2004; Powell et al. 2005; Lundborg 2006).

From a theoretical point of view, the consideration of peer group influences further separates the explanation for the consumption of addictive substances from the

traditional notions, and from the theory of social relationships. The former is based on the idea that consumption depends only on the characteristics of the individual, whereas the latter considers the social network as an agent that modifies and directly affects such use (Manski 1993, 1995). Similarly, DeCicca et al. (2000) point out that the consumption of tobacco, alcohol, and other drugs can be understood if we consider that adolescents need recognition of their actions and behaviour from their group of friends, their family, and their social environment. The consideration of these influences leads us to suppose the existence of ‘social multipliers’, meaning that a certain policy can not only have a direct effect on the individual, but can also have an indirect effect through the peer group. As Lundborg (2006) states, when the social multiplier is high, even small interventions can have a great effect on individual behaviour. Nevertheless, Manski (1995) establishes different levels of social interaction. First, the behaviour of the individual is influenced by the exogenous characteristics of the peer group; that is to say, the ‘contextual effect’. Second, the individual is influenced by the behaviour of the peer group, which is identified as the ‘endogenous effect’. Finally, Manski (1995) recognises the possibility of an unreliable relationship between the behaviour of the individual and that of the group, which can be wrongly identified as ‘contextual’ or ‘endogenous’ effects. These latter effects – the ‘correlated effects’ – are due to the existence of undetected characteristics shared by all members, which generally result from the previous sorting; that is to say, the non-random choice of group by individuals. Much of the literature highlights the importance of distinguishing among these three types of effects when deriving policy implications. Contextual and endogenous effects indicate that groups matter; the individual is influenced by the group through its characteristics and its behaviour. However, ‘social multipliers’ are only activated by the

endogenous effects in so far as they can reflect feedback interactions. Contextual and correlated effects do not generate this multiplier effect.

Another key aspect of this subject is Psycho-social Theories of addiction. Adolescence is a phase of development where the individual configures his own identity in relation to the peer group, which may lead to the adoption of certain models of risky behavior. In recent years, this psycho-social line of research has undergone substantial development, leading to a more inclusive view of the individual, combining cognitive, affective, and behavioral aspects. In addition, recognition has also been given to the importance that the relatively close environment has on individual behavior. This psycho-social perspective has been developed in the Social Learning Theory [Bandura (1977)], which focuses on the relationship that individuals have with their direct environment, essentially with the family unit, or in the Theory of Planned Behavior [Ajzen 1985 and 1991]. Other related theoretical frameworks have been the Bio-psycho-social Model [Leigh and Reiser (1980), Schwartz (1982)] and the Theory of Problem Behavior [Jessor and Jessor (1977)], centered on the combination of biological, psychological, and social factors as determinants of behavior in the consumption of addictive substances. We should also mention other theories, such as Socio-cultural Models (Sympathetic Theory) and Public Health Models, which attempt to identify social factors, including poverty, unemployment, and violence, all of which have the effect of increasing the risk of Drug use in particular groups of individuals. In this context, developments in models that explain the use and abuse of addictive substances, including alcohol, appear to focus on two fundamental points. First, the recognition that biological, psychological, and environmental determinants are present in the consumption of such substances. Second, the central importance of the environment,

from the closest, i.e. the family, through the school or workplace, to the institutional level, the latter being characterized by legal regulations.

Duarte et al. (2011) find that, although a class-based peer effect is significant if the closest peer group is not considered, consistent with prior studies (Gaviria et al. 2001; Powel et al. 2005), this meaning disappears once the effect of the closest peer group has been defined, and the latter becomes clearly significant. The results provide evidence in favor of a reconsideration of the measures of the paired groups and, consequently, a reinterpretation of the references found in the literature. Estimates indicate that if the student attends a class where the proportion of marijuana smokers is 10 points higher, the probability of becoming a smoker increases by 2.1 points. However, one of the most important findings is that, when controlling for a closer peer group effect, the traditional peer variable measured at the class level is not significant, even though income and school campaigns report that drug use risks appear to be significant, the former as a risk factor and the latter as a protective factor.

III.II. Intergenerational consumption

Most smokers begin smoking in adolescence or earlier (Smith et al. 2007), and become regular smokers at the same stage of life (Vandewater et al. 2014), indicating that smoking remains a major health problem, which is why it is important to understand the reasons that lead adolescents to take up smoking and become regular smokers.

Duarte and Molina (2015) study the reasons why adolescents decide to start smoking and continue to create a relationship of dependence. Among the most important are, because they like to smoke, and because it relaxes them. Beneath these main reasons we find other social factors, related to the environment. Duarte and Molina (2015) study the influence of the parents on the adolescents, to determine whether there is a transmission from parents to children. The authors observe that

having a mother who is a housewife and an unemployed father increases the probability of being a non-smoker, although these characteristics do not exert a significant influence on the level of consumption. While the level of education of the father has a negligible effect on the probability of being a non-smoker, having a mother with a college education increases the probability of being a non-smoker and reduces the level of consumption. Most notably, estimates suggest that smoking among family members is an important determinant. In addition, having two smoking parents implies an increased risk of becoming a smoker, relative to having only one parent smoker. There is strong evidence for this result in the literature, where it is known as the intergenerational transmission of smoking (Ashley et al. 2008; Becoña et al. 2012; Melchior et al. 2010; Vanderwater et al. 2014). Consequently, it is claimed that the visibility of smoking among adult role-models is an important predictor of adolescent smoking (O'Loughlin et al., (2009)). It seems that parents who stop smoking before their children reach adolescence could reduce the likelihood of their children becoming smokers, and could also have a positive effect that reduces the level of consumption.

IV. Public policy

The abuse of drugs in adolescents can trigger a relationship of dependence on these substances. Continued consumption over time can lead to a number of physical and psychological problems. In addition, the individual can become accustomed to "handle" their problems by consuming alcohol and, consequently, do not learn to actually solve them, thus significantly postponing normal psychological development. Similarly, substance abuse can lead to premature sexual contacts, with the consequent risk of unplanned pregnancy and the transmission of sexual diseases. These are the main problems faced by adolescents who are addicted.

Drug abuse among adolescents is clearly an important public health problem, in that it affects both present and future health, and evidently involves a significant loss of individual human capital, thus reducing the possibility of higher incomes. Consequently, it seems logical that society think in terms of restrictive socio-economic regulation and prevention that, in addition to including educational measures, also imposes effective penalties. Some of the measures studied in papers such as Duarte and Molina (2004), and Gil and Molina (2011), among others, are the following.

The Spanish government has presented a draft parliamentary bill on the prevention of alcohol consumption among adolescents. The main aspects of this proposed legislation are a ban on alcohol consumption on the public highway, the imposition of a minimum age of 18 for the purchase of alcohol, the strengthening of the current system of penalties imposed on shops that sell alcohol to under-age customers and, re-education measures for adolescent offenders in the form of compulsory community service. The presentation of this draft bill has given rise to a wide-ranging political and social debate in anticipation of its passage through the Spanish Parliament, with the aim being to introduce new proposals that improve the initial contents of the bill. Policy measures that directly affect individual income could be effective in preventing alcohol abuse among adolescents. However, elasticities of 20% to 30% suggest that these measures must be accompanied by others aimed at the social environment of the adolescent population.

Another option is a publicity campaign that focuses on the harmful effects of drugs. A new law increases the penalties for anyone driving a motor vehicle under the influence of alcohol, with the aim of reducing the number of adolescents involved in such misconduct, at the same time as it reduces the number of peers who are involved, so that every adolescent should realize that being a passenger in a vehicle driven by an

individual under the influence of alcohol is also subject to a penalty. Thus, the effect produced in the group could be several times the effect at the individual level.

With regard to the consequences of drug consumption, we find the harmful effects on health, from the point of view of political implications, we must ask ourselves if the current range of health and academic goods and services offered by the public sector are the most appropriate for the Modern Spanish adolescents. In this sense, we must also remember that, although these goods and services are provided by the State, that does not mean that they are free. That said, and although there is no evidence from Spain about the effectiveness of public policies aimed at reducing alcohol consumption, such as increased taxes on alcoholic beverages or increasing the minimum age of access to alcohol, the government has recognized the magnitude of the problem and is beginning to allocate part of its resources to the prevention and rehabilitation of adolescents who have fallen into the trap of alcohol abuse. The National Anti-Drug Campaign of the Spanish Government, (the National Plan on Drugs, 2001), aims to provide information not only to young people, but also to their teachers and parents, in the hope that they will be able to exercise positive influence on adolescent habit formation.

Escario and Molina (2004) model the optimal fiscal policy on three types of tobacco, that is to say, on Virginia tobacco, black tobacco, and cigars, as an instrument for controlling the social costs generated by tobacco consumption. To that end, they obtain the individual optimal taxes from the price elasticities from ALAIDS (Addictive and Linear Almost Ideal Demand System), which has been estimated using Spanish time-series from 1964 to 1995. The empirical results show that the homogeneous and symmetric version of the ALAIDS satisfies the econometric and theoretical requirements and, hence, can be used to represent the economic behavior of Spanish

smokers during this period. Having chosen this particular model, the expenditure elasticities indicate that all tobacco goods are necessities, with cigars exhibiting the highest mean effect, and Virginia tobacco the lowest. All the Marshallian own-price elasticities are negative, as the theory predicts for decreasing demands, with the three effects being statistically significant at the 5% level. With respect to the cross-price effects, the authors obtain a positive sign, characteristic of substitute goods, for the pairs Virginia tobacco–black tobacco, and black tobacco–cigars, and a negative sign, indicating complementary goods, for the pair Virginia tobacco–cigars. The evolution of the elasticities shows a decreasing trend in the expenditure effects of black tobacco and cigars, whereas the trend is increasing for the elasticity of Virginia tobacco. As regards the own-price elasticities, the absolute terms corresponding to Virginia tobacco increase from the beginning of the sample until the end, whereas the values corresponding to black tobacco and cigars decrease throughout the length of the period. The empirical results show small differences between the optimal taxes and the social costs for all three tobacco goods, with the highest corresponding to Virginia tobacco, -2.77% , and with the lowest, corresponding to black tobacco, being almost null, -0.51 . As regards the time evolution, the study finds decreasing trends in the difference of the three goods. In conclusion, when seeking to reduce tobacco consumption, Spanish policy-makers should fit the optimal taxes to the social costs generated by that consumption.

These are some of the political implications analyzed in the papers studied in the literary review. This work, as a review of the work done by the economists Duarte et al. on drug abuse in Spanish adolescents can provide ideas for new research in this field, taking into account the aspects collected in this review.

V. Conclusions

According to this literature review, the most important evidence obtained so far for Spain is gathered in the following results. While it is true that the authors cited (García and Labeaga 1992; Jimenez and Labeaga 1994; García and Labeaga 1996; Jiménez-Martín et al. 1998; Labeaga 1999; Escario and Molina 2000; Escario and Molina 2001; Escario and Molina 2001; Jones and Labeaga 2003; Escario and Molina 2004; Escario and Molina 2004; Duarte and Molina 2004; Carrasco et al. 2005; Duarte et al. 2005; Duarte et al. 2005; Duarte et al. 2006; Jiménez-Martín et al. 2006; Gil and Molina 2007; Gil and Molina 2009; Duarte et al. 2009; Todeschini et al. 2010; Todeschini et al 2010; Duarte et al. 2011; Duarte et al. 2013; Borderías et al. 2015; Duarte et al. 2015; Duarte et al. 2015) have identified the environment and the lack of information on the harmful effects of drug consumption as the primary determinant variables in drug use, they also show that, through information campaigns and reduction of drug use by both parents and friends, the rates of individual drug abuse would be reduced.

It is important to invest money in information campaigns about the risks of drug use, because adolescents are the most vulnerable to substance abuse leading to dependency, to school failure, and consequently to a deterioration in the individual stocks of human capital - not to mention the effects on health.

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